

REMARKS

Applicant has studied the Office Action dated December 4, 2006. Claims 1-15 are pending. Claims 1, 4 and 8 have been amended. Claims 1, 4 and 8 are independent claims. No new matter has been added as the amendments have support in the specification as originally filed.

It is submitted that the application, as amended, is in condition for allowance. Reconsideration and reexamination are respectfully requested.

Objection to Drawings

The Examiner objected to the drawings. Specifically, the Examiner asserted that the referencing to input stage 100 in FIG. 2 is not in English. With this paper, amended FIG. 2 has been submitted in which the referencing to input stage 100 has been replaced by the English translation. It is respectfully submitted that the grounds for objection have been overcome and it is respectfully requested that the objection be withdrawn.

Objections to Claims

The Examiner objected to claims 1-15 due to informalities. Specifically, the Examiner asserted that the recited feature "an interpolator re-sampling ... into a frequency of a doubled symbol clock to interpolate" in claims 1, 4 and 8 is misdescriptive and the end phrase "to interpolate" is incomplete. With this paper, claims 1, 4 and 8 have been amended to recite "an interpolator interpolating the baseband signal ... into a digital signal synchronized with a doubled signal clock" and to remove the end phrase "to interpolate." It is respectfully submitted that the amendment, for which support is found at paragraphs 0028 and 0032 of the application as originally filed, overcomes the grounds for objection and it is respectfully requested that the objection be withdrawn.

§ 103 Rejections

Claims 1, 4 and 8 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Oh (U.S. Pat. No. 6,226,049) in view of Grabb et al. ("Grabb" U.S. Pat. No. 6,292,518). This rejection is respectfully traversed.

It is respectfully noted that the Federal Circuit has provided that an Examiner must establish a case of prima facie obviousness. Otherwise the rejection is incorrect and must be overturned. As the court recently stated in In re Rijkaert, 28 USPQ2d 1955, 1956 (Fed. Cir. 1993):

"In rejecting claims under 35 U.S.C. § 103, the examiner bears the initial burden of presenting a prima facie case of obviousness. Only if that burden is met, does the burden of coming forward with evidence or argument shift to the applicant. 'A prima facie case of obviousness is established when the teachings from the prior art itself would appear to have suggested the claimed subject matter to a person of ordinary skill in the art.' If the examiner fails to establish a prima facie case, the rejection is improper and will be overturned." (citations omitted.)

With this paper, claim 1 has been amended to recite that the multipath channel information is detected using only a pilot signal with data frequency components removed, claim 4 has been amended to recite extracting only symbol synchronization information and claim 8 has been amended to recite the amended limitations of both claims 1 and 4. It is respectfully submitted that the combination of Oh and Grabb fails to disclose these limitations. Support for the amendments can be found in the application as originally filed at paragraphs 0028, 0039, 0040, 0045 and 0048 and that the limitations solve a problem of prior art methods by preventing performance of the carrier recovery unit from being degraded by data, as disclosed in paragraph 0040.

It is respectfully noted that the Examiner, at paragraph 4 on page 3 of the Office action, asserts that col. 5, ll. 51-64 and col. 6, ll. 16-17 of Oh disclose all the limitations of claim 1 except for the signal format of the received HDTV signal. It is further respectfully noted that the Examiner, at paragraph 4 on page 4 of the Office action, asserts that col. 5, ll. 47-50 and 59-64 of Oh disclose all the limitations of claims 4 and 8 except for the signal format of the received HDTV signal.

It is respectfully noted that Oh discloses, at col. 5, ll. 47-52, that "a carrier is recovered using a pilot signal included in the data output by the A/D converted 306 and the recovered carrier is multiplied by the output of the A/D converter 306 to recover data of a baseband." It is respectfully submitted that Oh does not disclose that the multipath channel information is detected using only a pilot signal with data frequency components removed, as recited in amended claims 1 and 8, but rather discloses the prior art method that the present invention improves upon, specifically using both carrier information and data information to recover the carrier, as evidenced by the disclosure that the data may be recovered from the "recovered carrier." It is further respectfully submitted that nowhere in Oh is extracting only symbol synchronization information disclosed, as recited in amended claims 4 and 8.

It is respectfully submitted that Grabb fails to cure the deficiencies of Oh with respect to amended claims 1, 4 and 8. Therefore, it is respectfully asserted that claims 1, 4 and 8 are allowable over the cited combination of references.

Allowable Subject Matter

Applicant graciously acknowledges the Examiner's indication of allowable subject matter in claims 2, 3, 5-7 and 9-15. Since it is believed that the grounds for objection to claims 2, 3, 5-7 and 9-15 have been overcome, it is respectfully requested that the claims be passed to allowance.

CONCLUSION

In view of the above remarks, Applicant submits that claims 1-15 of the present application are in condition for allowance. Reexamination and reconsideration of the application, as originally filed, are requested.

No amendment made was related to the statutory requirements of patentability unless expressly stated herein; and no amendment made was for the purpose of narrowing the scope of any claim, unless Applicant has argued herein that such amendment was made to distinguish over a particular reference or combination of references.

If for any reason the Examiner finds the application other than in condition for allowance, the Examiner is requested to call the undersigned attorney at the Los Angeles, California telephone number (213) 623-2221 to discuss the steps necessary for placing the application in condition for allowance.

Respectfully submitted,

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Enclosure: Substitute FIGS. 1 and 2